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10/039,245	12/31/2001	Yan Wang	00-12	7297

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EXAMINER

SONG, SARAH U

ART UNIT PAPER NUMBER

2874

DATE MAILED: 04/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/039,245

Applicant(s)

WANG ET AL.

Examiner

Sarah Song

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The prior art documents submitted by the applicant in the Information Disclosure Statement filed on December 9, 2002 have all been considered and made of record (note the attached copy of form PTO-1449).

### ***Drawings***

2. Figures 2 and 3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

3. Claims 17, 21, 22 and 25 are objected to because of the following informalities: in line 10 of claim 21, change "paths" to --path--; regarding claim 22, according to the figures, it appears that the waveguiding regions (which are located within the second slab waveguide according to claim 21) would decrease as they approach the first waveguide array, and not the second waveguide array as claimed. Regarding claims 17 and 25, the recitation of a "width that is substantially the same for all N" is vague and indefinite (i.e. "for all N" is vague and indefinite, where N was previously recited as the number of waveguiding regions only, and not the number of combined regions); the Examiner suggests modifying the claim language to recite, " wherein the combined width of each waveguiding region and its adjacent segment of predetermined width is substantially the same" to clearly recite the limitation. The claims will be interpreted accordingly.

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Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Li (U.S. Patent 5,745,618, provided by the applicant). Li discloses an optical device comprising a substrate 200, a first star coupler 701 having a first waveguide array 715 coupled to a first slab waveguide 710; a second star coupler 702 having a second waveguide array 725 coupled to a second slab waveguide 720; N waveguide regions 72 where N is an integer greater than or equal to 2, said waveguiding region located within said second slab waveguide and being spaced apart from one another by segments of predetermined width; and a grating coupler 760 comprising a plurality of waveguides having unequal optical path lengths, said grating interconnecting the first and second star couplers. In column 1, lines 32-37 of Li, and in the specification of the instant application in paragraph 4, a slab waveguide is disclosed as, "a planar area, which is large compared to the area of an individual waveguide of the same length". It is noted that although the transition regions are stated as being "adjacent to" the slab waveguides (abstract), it is evident that the waveguiding regions of the transition region also constitute a part of the slab waveguide due to its planar area, which is large compared to the area of an individual waveguide of the same length. See Figure 7.

Regarding claims 2, 14 and 22, Figure 7 illustrates the waveguiding regions having widths that progressively decrease as they approach the second side of the slab waveguide.

Regarding claims 5, 15, 16, 23 and 24, Figure 7 illustrates the discrete sectors (the segments of predetermined widths) having widths that progressively increase as they approach the second side of the slab waveguide.

Regarding claims 6, 7, Figure 7 illustrates the waveguiding regions to be substantially parallel to each other and to extend in a direction generally perpendicular to the waveguide arrays.

Regarding claims 8, 9, column 5, lines 16-38 disclose that the waveguiding regions may progressively decrease in a linear manner or a non-linear manner.

Regarding claims 17 and 25, column 5, lines 9-13 disclose that the combined width of each waveguiding region  $a_n$  and the segment adjacent thereto  $s_n$  is constant.

Regarding claims 3, 18, 26 and 27, column 4, lines 33-56 disclose that the waveguiding regions and the waveguide arrays each comprise a light-carrying core material (inherent) whose indices of refraction are substantially equal to one another and which are formed on a common substrate 200.

Regarding claims 4, 19 and 28, column 4, lines 33-49 disclose that the discrete sectors (the segments of predetermined widths) have a lower index of refraction than the waveguiding regions.

Regarding claim 11, a branch power splitter is disclosed in Figure 8.

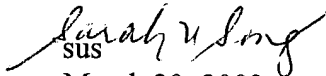
Regarding claims 12, 20 and 29, column 4, lines 25-29 disclose that the input and output waveguides are single mode waveguides.

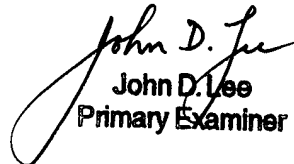
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***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Doerr and McGreer et al. disclose transition regions similar to that of Li. Tyan et al. and Yamauchi et al. disclose island regions of lower refractive index.

7. Any inquiry concerning the merits of this communication should be directed to Examiner Sarah Song at telephone number 703-306-5799. Any inquiry of a general or clerical nature, or relating to the status of this application or proceeding should be directed to the receptionist at telephone number 703-308-0956 or to the technical support staff supervisor at telephone number 703-308-3072.

  
sus  
March 20, 2003

  
John D. Lee  
Primary Examiner